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DEPARTMENT OF AGRICULTURE
OFFICE OF THE DAIRY COMMISSIONER.

OTTAWA, December 22, 1917.

A New Plan for Cow Testing.

In no line of agricultural work in Canada is there a greater opportunity to increase production than there is in the improvement of dairy herds. The average yield of milk per cow in Canada is only about 4,300 pounds per annum. Compare that with individual records of over 25,000 pounds of milk in a year and herd records averaging over 10,000 pounds for each cow and the great possibilities for improvement are at once apparent.

The keeping of herd records, commonly known as "Cow Testing" is the safest and surest basis for that intelligent breeding and selection which, with proper feeding, results in an improvement in production that makes the difference between the general average yield and those which are at the top.

Various plans have been tried since the work was first started under the direction of the Dairy Branch in 1904 for promoting and extending the work of keeping herd records, resulting finally in 1917 in the operation of 35 dairy record centres, each of which was in charge of an experienced man who gave his whole time to the work of cow testing within a limited area, and whose business it was to see that the samples were properly tested. There were also a large number of small associations, or groups, for whom the testing was done by some qualified person in the locality.

In 1917 there were 29,249 cows under test and record in connection with the organized efforts of the Branch in this direction. There have also been many hundreds of cows tested independently by owners who were not connected with any of the dairy record centres or cow testing associations, but who have been interested by the general propaganda.

The average yield of milk per cow for all Canada has increased fully 30 per cent since the work was first started. This means that the total value of Canadian dairy products was greater by at least \$50,000,000 in 1917 than it would have been if there had been no improvement or increase in the herds since 1904. The increase in the yield of milk from individual herds has been much more striking because the general average includes all those herds whose production of milk has remained stationary, or nearly so.

The results already obtained have awakened such a widespread interest in cow testing, and the requests for help are so insistent, that some reorganization of the work which will cover every dairying district in the Dominion seems to be advisable. It would not be practicable to extend the present plan of dairy record centres sufficiently to include the whole country, and to continue indefinitely the centres now established and at the same time neglect other districts would be unfair and discriminating.

A NEW PLAN.

It is proposed, therefore, to abolish the dairy record centres and to enlist the services of cheesemakers and buttermakers or other qualified persons to do the testing at the rate of 10 cents per test, the milk testers to provide their own equipment. This remuneration we believe will be sufficient to induce many cheesemakers and buttermakers to get their patrons interested in the work of keeping herd records.

The cheese factories and creameries are natural centres for herd record work. The samples are conveniently collected on the milk or cream wagons and it is always easy to communicate with members who are patrons of a cheese factory or a creamery. An increase in the production of the herds in the district means not only greater returns to the farmers themselves, but a larger output for the creamery or cheese factory, thus ensuring a larger revenue for those who are depending on it. In many localities, an industrious man could earn very good wages by devoting his whole time to the business of testing milk, while at almost any cheese factory or creamery the wages of one assistant could easily be earned.

In order to carry on herd record work in any district under the new arrangement, it will only be necessary for the farmers to co-operate with some qualified milk tester by weighing and sampling each cow's milk night and morning, on three days every month, and by delivering the samples at the appointed place of testing. See full directions on page 5.

Any farmer or group of farmers desiring to take up herd record work should notify the Dairy Commissioner using Form C. T. 42 attached to this circular.

When the testing is done by a cheesemaker or a buttermaker, it may not be convenient to continue the testing during the winter months. This is not as much of a disadvantage as it was thought to be at one time. Our experience leads us to believe that for purposes of comparison between cows in a herd, a record of the factory season is practically as good as one which covers the whole milking period. It simplifies the matter very much if samples for the Babcock test have to be dealt with only while the factories are in operation.

Where the creameries and cheese factories are operating the year round, the work can be continued for the whole twelve months if desired.

In dealing with the yield of milk before and after the factory season, it would be quite easy for the farmers to keep a record of weights only, and these may be forwarded direct to the Dairy Commissioner to be added to the figures for the factory season. The butter fat can then be calculated from the first and last tests.

It does not follow because the dairy record centres will be no longer in existence that the testing which has been carried on under such auspices need be discontinued. There is no reason why records of the same herds should not be kept under the new plan. An endeavour will be made to provide for continuity as far as possible. With this end in view, any farmer who wishes to continue keeping records, or others who wish to begin, should at once notify the Dairy Commissioner, Ottawa, Ont., to that effect.

Any cheesemaker, buttermaker or other qualified person who is prepared to undertake the testing of milk should notify the Dairy Commissioner to that effect as soon as possible, using the attached Form C.T. 43.

Some dairymen may find it impracticable to save samples to be tested for percentage of fat. In these cases, we suggest that they keep a record of the weight of milk only. This is a very simple operation and blank forms for that purpose will be supplied by the Dairy Commissioner to any farmer who applies for them.

WHAT THE DEPARTMENT OF AGRICULTURE IS PREPARED TO DO.

The Department of Agriculture, through the Dairy and Cold Storage Commissioner's Branch, will:—

- (a) employ a supervisor in each province;
- (b) pay 10 cents per test for all Babcock tests made and recorded on the sheets sent to Ottawa;
- (c) make the necessary calculations and send every farmer a monthly statement of the milk and fat produced by each cow in the herd, also send each cow's total production at the end of the season; and
- (d) supply blank forms for recording weights and tests of milk, preservative tablets for the composite samples and sulphuric acid for testing. The routine as far as the farmers are concerned will be the same under the new plan as it has been heretofore and the same forms will be used.

WHAT IS A HERD RECORD?

A herd record is a statement of the pounds of milk and butter fat produced by each cow in the herd. It is secured, on the plan herein outlined, by weighing the milk and taking a sample for testing night and morning on three days each month at intervals of ten days, say on the 1st, 11th and 21st. The total of the weights on these three days multiplied by ten gives the pounds of milk produced in thirty days, and the pounds of milk multiplied by the test (percentage of fat) and divided by 100 gives the pounds of fat. Thus for example, if the six weighings on the three days give 16 and 14 pounds, 15 and 13 pounds, 14 and 14 pounds respectively, the total would be 86 pounds, which multiplied by ten, gives 860 pounds, as the calculated yield of milk for the month. If 860 be multiplied by 3.5 (supposing that to be the percentage of fat in the composite sample) and divided by one hundred the result is 30.1, which would be the calculated pounds of fat for the month. This repeated from month to month during the full lactation period will give a record of the milk and fat produced accurately enough to determine the relative standing of the different cows in the herd.

WHY DAIRYMEN SHOULD KEEP HERD RECORDS.

Keeping records, breeding and feeding are inseparably linked together as the prime factors in building up a dairy herd. No one can tell how much milk and fat a cow produces unless the milk is weighed and tested. If the owner does not know how much milk and fat each cow produces, he cannot tell which are the best cows to raise heifer calves from, or how to feed them properly. With the figures in black and white regarding the production of each cow before him, the owner has something definite to work on in building up a profitable dairy herd. He knows which cows to keep and breed from; he knows which to sell for beef if they are not up to the standard as milkers, or the ones for which he can demand a high price if it is desirable to sell. He also has a safe guide in feeding, for the scale will show if individual cows respond to improved feeding. He will be able to avoid the waste of expensive feeding of cows that have not the necessary dairy capacity to give increased yields from increased rations.

The best results are secured when record-keeping is made a permanent practice and continued from month to month and from year to year.

RECORD FORMS.

The following is the style of form supplied by the Department of Agriculture through the Dairy Commissioner with the necessary information and weights properly filled in.

Form C. T. No. 35.
150 m. 3-15.

J. A. BUDDICK,
COMMISSIONER,
OTTAWA.

DOMINION DEPARTMENT OF AGRICULTURE.
OFFICE OF THE DAIRY AND COLD STORAGE COMMISSIONER.

HERD NO. 4

MILK RECORD FOR 30 DAYS ENDING

Name *John Smith* P. O. *Dorville* March 31 1917
Record Centre *Black River* Testing Branch *Black River* Prov. *Ont.*

DESCRIPTION OF COWS.					COW No.	3 DAYS' WEIGHINGS OF MILK.				Total Pounds of Milk calculated.	FAT,	
NAME.	BREED.	Age.	Date of last calf.	D A T E S.				Per Cent.	Total Pounds.			
Blossom	Grade Ayrshire	5-	Feb. 10	1	a.m. 19	17 1/2	16	30				
Beauty	Grade Holstein	4	Feb 19	2	a.m. 17	14	16					
White	Grade.	11	Mar 1	3	p.m. 14	14	16					
				4	a.m. 13	14	17					
					p.m. 13	17	11					
					a.m. 13	17	11					
					p.m. 13	17	11					

The weights are recorded at the farm and the sheet is sent along with the samples to the place where the testing is done. The milk tester enters the per cent fat and forwards the sheet to the Dairy Commissioner, Ottawa, where the total pounds of milk and fat are calculated. The sheet is then returned to the farmer showing the total pounds of milk and fat each cow has produced for the period.

To avoid confusion and error in keeping the records, it is suggested that each cow be given a name as well as a number and that these names be written on each monthly sheet opposite the proper numbers, care being taken to keep them always in the same order. The age, breed and date of freshening for each cow should be entered on the first sheet on which her record appears for the season.

EQUIPMENT AT THE FARMS.

The necessary equipment and cost of the same for weighing the milk and taking samples for the Babcock test is about as follows:—

One 40-pound spring scale, \$1.25.

One 6-ounce sample bottle for each cow in the herd, 5 to 6 cents each.

One small sampling dipper, 10 cents.

One box for holding the sample bottles, from \$1 to \$1.25 according to number of bottles required.

Blank forms for recording the weights.

The entire outfit can be purchased from any of the following dairy supply houses: G. A. Gillespie, Peterborough, Ont.; W. A. Drummond & Co., 214 King Street East, Toronto, Ont.; C. Richardson & Co., St. Mary's, Ont., Calgary, Alta., Winnipeg, Man., and Vancouver, B.C.; Morgan's Supply House, London, Ont.; G. E. Booth, Ingersoll, Ont.; R. M. Ballantyne Ltd., Stratford, Ont.; D. H. Burrell & Co., Brockville, Ont.; D. Derbyshire Co., Ltd., Brockville, Ont.; The Lawrence Dairy Supply Co., Ltd., 87 Besserer Street, Ottawa, Ont.; De Laval Co., Ltd., Peterborough, Ont., 21-23 St. Peter Street, Montreal, Que., Winnipeg, Man., and Vancouver, B.C.; The Smith Hardware Co., Belleville, Ont.; B. Trudel & Co., 38 d'Youville Square, Montreal, Que.; Ellis & Grogan, Calgary, Alta.; W. H. Gunn & Co., Vancouver, B.C.; Dillon & Spillett, Charlottetown, P.E.I.

If only the weights of the milk are taken, it will only be necessary to provide a scale and secure the blank forms for recording the weights of the milk from the Dairy Commissioner, Ottawa.

PREPARING THE EQUIPMENT FOR USE.

The owner's name should be put on the outside of the sample bottle box. Each bottle should be numbered to correspond with the numbers of the cows to be tested. The numbers should be put on so as to show plainly when the bottles are placed in the box. See illustration on page 7. If possible, use enamel paint to mark the numbers on the bottles. Paper labels come off in the washing.

See that each bottle contains a preservative tablet when the first sample of milk is put in, and that the corks or covers fit properly. During hot weather it is advisable to use two tablets.

Consult with the milk tester as to the best dates on which to weigh and take samples.

Keep the samples in a cool place. Avoid shaking the bottles violently, as there is a danger of churning the milk.

Keep the sample box locked and away from children, as the preservative tablets used in the samples are poisonous.

Always place the record sheet in the sample box when sending it to the testing point.

Do the work carefully and remember that the information obtained from this work is for your own guidance in improving your herd.

DUTIES OF THE MILK TESTER.

There should be close co-operation between the milk tester and the farmers who are keeping herd records.

Every month as the date for testing approaches, the milk tester should remind each member that the samples must be in on time. If the testing is done promptly and the bottles washed and returned before the next date for weighing and sampling, it will encourage the farmers to also be prompt in doing their part of the work. Carelessness or indifference on the part of either the farmer or milk tester is certain to result in injury to the whole scheme.

When the samples are delivered to the testing point, the milk tester should see that the record sheet (which should always accompany the box) is properly filled in, as shown on page 4. The age, breed, and date of freshening need only be given once.

TESTING THE COMPOSITE SAMPLES.

For instructions in the testing of composite samples, milk testers are referred to Bulletin No. 45, copies of which will be furnished by the Dairy Commissioner, Ottawa.

Aside from being particular about having the samples properly prepared for testing and being accurate in measurements and readings, the most important point is not to mix the numbers. The Babcock test bottles should be at all times plainly numbered and kept in proper rotation.

WASHING THE SAMPLE BOTTLES AND CORKS.

The milk tester must see that the composite sample bottles and corks are washed and scalded, after which the bottles should be left to drain, and when thoroughly dry, the preservative tablets may be put in and the corks placed in the bottles. Care should be taken to see that the bottles are all properly numbered.

Unless the farmer has already been furnished with a supply of blank forms, place the required number for the next period in the sample bottle box.

It is recommended that each milk tester number consecutively the herds he is testing.

The box containing the samples should always reach the farmer before the next date for weighing and sampling.

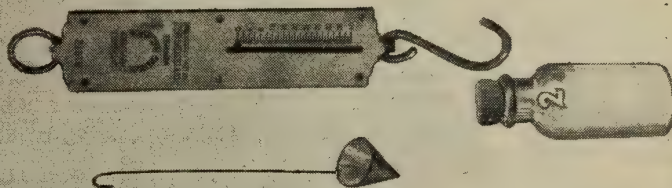
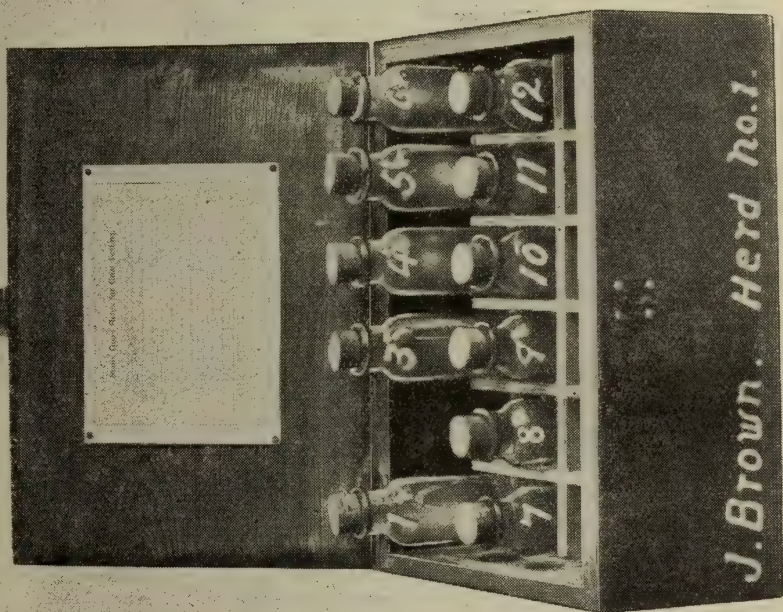
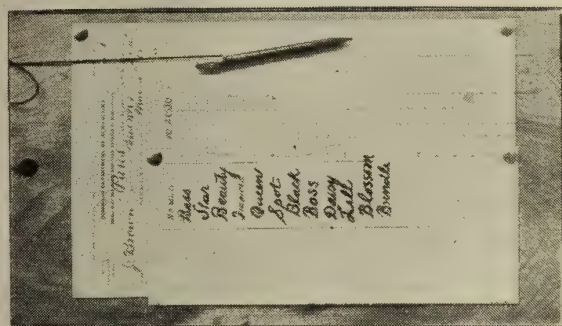
FORWARDING RECORD SHEETS TO OTTAWA.

When the testing is completed for the month, the sheets should be promptly forwarded to Ottawa by the milk tester. Failure to do this results in delay and causes the owner to lose interest. Place the sheets together, according to herd numbers; attach milk tester's credit slip, showing number of tests made and total amount due at 10 cents per test; fold them only once and mail in the addressed envelope provided for this purpose.

The milk testers will please remember that the information given on the record sheets belongs to the owners of the herds and must be treated as strictly confidential.

The provincial supervisors will give all the assistance possible in getting the work started. Requests for the supervisor's services or any correspondence relating to herd record work should be addressed to the Dairy Commissioner, Department of Agriculture, Ottawa.

No postage is necessary on record sheets or correspondence addressed as above.



OTHER PUBLICATIONS OF THE DAIRY BRANCH RELATING TO DAIRYING.

BULLETINS.

Date Issued.	No.	Title.
1907	*20	The Use of Ice on the Farm.
1909	*22	The Cooling of Milk for Cheesemaking.
1910	25	Coulommier Cheese, Some Notes on its Manufacture.
1911	28	The Dairying Industry, an Historical and Descriptive Account.
1911	30	Cream Cheese. (Second Edition.)
1912	*32	The Care of Cream for Buttermaking.
1913	37	The Island of Orleans Cheese.
1914	42	The Dairy Industry Act, 1914, and Regulations.
1915	45	The Testing of Milk, Cream and Dairy Products by Means of the Babcock Test.
1917	49	Small Cold Storages and Dairy Buildings.
1917	53	Buttermaking on the Farm.

CIRCULARS.

1914	10	Notes on Cow Testing.
1915	*14	Causes of Variation in the Percentage of Fat in Hand Separator Cream.
1915	*16	Cow Testing Notes.
1916	18	The Use of Pepsin as Substitute or partial Substitute for Rennet in the Manufacture of Cheese.
1916	19	Directions for Using Soluble Powdered Pepsin as a Substitute for Rennet.
1917	*20	Cow Testing.
1917	21	Further Notes on the Use of Pepsin and Other Substitutes for Rennet in the Manufacture of Cheese.
1917	22	The Manufacture of Cottage and Buttermilk Cheese.
1917	23	The Manufacture of Buttermilk from Skimmed Milk.

* A sufficient number of bulletins 20, 22 and 32, and circulars 14, 16 and 20 will be sent to the manager of any cheese factory or creamery to supply each patron with one.

Any of these publications will be sent free of charge on application to the Dairy and Cold Storage Commissioner, or to The Publications Branch, Department of Agriculture, Ottawa, Ont.

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